In the Claims

1. (original) A detector arrangement for detecting a narrowband signal in an input signal, the detector arrangement having : an adaptable filter coupled to the input signal and having a frequency response with an adaptable centre frequency, and a filter controller for controlling the filter, to track the narrowband signal, the controller being dependent on a relationship between the input signal and an output of the filter, the relationship indicating how closely the filter is tracking the narrowband signal.

2. (original) The detector arrangement of claim 1, the comparison being a ratio of a characteristic of an output of the filter output as a proportion of a characteristic of the input signal.

3. (original) The detector arrangement of claim 1, the filter having an adaptable bandwidth, the controller being arranged to control a bandwidth of the filter on the basis of the comparison.

4. (original) The detector arrangement of claim 1 the controller having an adaptable forgetting factor, the forgetting factor being adaptable according to the comparison.

5. (original) The detector arrangement of claim 1, the controller using an adaptive algorithm.

6. (original) The detector arrangement of claim 5, the adaptive algorithm being a recursive least squares (RLS) algorithm.

7. (original) The detector arrangement of claim 3, arranged to derive a bandwidth control signal from the input signal and the output of the filter, according to the comparison and to a mapping defining how the bandwidth control is derived.

8. (original) The detector arrangement of claim 7, the mapping being a linear mapping with limiting of extreme values.

9. (original) The detector arrangement of claim 7, arranged to smooth the bandwidth control signal to reduce jitter.

10. (original) The detector arrangement of claim 2, arranged to derive the ratio using a recursive pseudo division process.

11. (original) The detector arrangement of claim 1, additionally having multiple filters, and being arranged to track simultaneously multiple narrowband signals in the input signal.

12. (original) The detector arrangement of claim 10, the multiple filters being arranged in two or more rows of serially cascaded filters, the controller being arranged to control the filters such that in each row, individual filters track different ones of the narrowband signals, and in the different rows, the same narrowband signals are tracked, but in a different order, the controller further being arranged to use error gradients derived from the outputs of filters of one of the rows, and use residual power outputs from one of the filters in each of the rows.

13. (original) The detector arrangement of claim 11, arranged to remove duplicate detections of the same narrowband signal by different ones of the filters, based on frequencies and power levels of the detections.

14. (original) The detector arrangement of claim 1 in the form of software.

15. (original) The detector arrangement of claim 1 in the form of apparatus.

16. (original) A tone processing arrangement having the narrowband detector arrangement of claim l, and a tone decoder.

17. (original) Apparatus for a central office, the apparatus having an arrangement for routing voice or data signals, and having the tone processing arrangement of claim 16, coupled to the routing arrangement.

18. (original) Software or circuitry arranged to derive an output representing a pseudo division of a signal representing a numerator by an input signal, using a continuous recursive process.

19. (currently amended) Software or circuitry ~~arranged to derive an output representing a pseudo division of a signal representing a numerator, by an input signal, by a~~ according to claim 18 wherein said continuous recursive process ~~having~~ comprises the steps of : multiplying the input signal by a previous output of the process, subtracting the result from a constant, and multiplying the result of the subtraction by the previous output.

20. (original) A detector arrangement for detecting multiple narrowband signals in an input signal, the arrangement having: multiple adaptable filters coupled to the input signal and having frequency responses with an adaptable centre frequency, and an adaptable bandwidth; and a controller for controlling the centre frequency and the bandwidth of respective ones of the filters, based on outputs of the filters, to track the narrowband signals, the multiple filters being arranged in two or more rows of serially cascaded filters, the controller being arranged to control the filters such that in each row, individual filters track different ones of the narrowband signals, and in the different rows, the same narrowband signals are tracked, but in a different order, the controller further being arranged to use error gradients derived from the outputs of filters of one of the rows, and use residual power outputs from one of the filters in each of the rows.

21. (original) A detector arrangement for detecting multiple narrowband signals in an input signal, the detector arrangement having: multiple adaptable filters coupled to the input signal and having frequency responses with an adaptable centre frequency, and an adaptable bandwidth; a controller for controlling the centre frequency and the bandwidth of respective ones of the filters, based on outputs of the filters, to track the narrowband signals, and an arrangement for removing duplicate detections of the same narrowband signal, based on frequencies and power levels of the detections.

22. (original) A method of using an output of the arrangement of claim 1 for monitoring or control purposes in voice or data processing equipment.

23. (original) A method of transmitting signalling information or user data using the arrangement of claim 1 to detect the signalling information or user data.

24. (original) A method of offering a voice or data transmission service to subscribers using the apparatus of claim 17.